

NAME Key

DATE \_\_\_\_\_

PERIOD \_\_\_\_\_

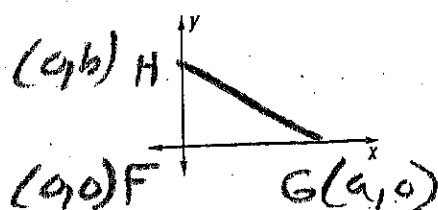
4-7

# Skills Practice

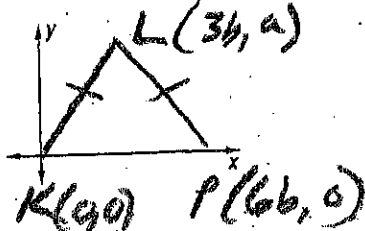
## Triangles and Coordinate Proof

Position and label each triangle on the coordinate plane.

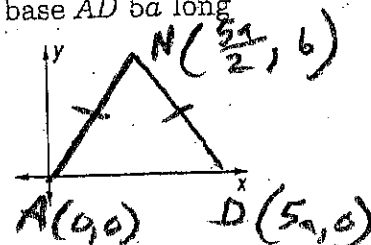
1. right  $\triangle FGH$  with legs  $a$  units and  $b$  units



2. isosceles  $\triangle KLP$  with base  $\overline{KP}$   $6b$  units long

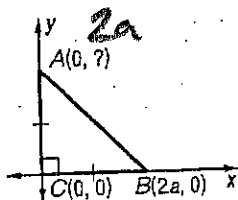


3. isosceles  $\triangle AND$  with base  $\overline{AD}$   $5a$  long

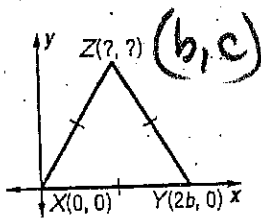


Find the missing coordinates of each triangle.

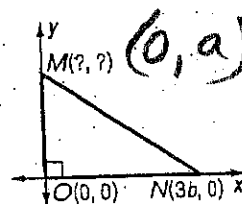
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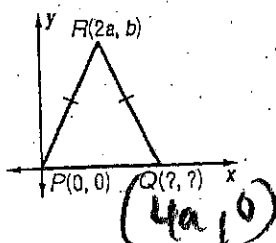
5.



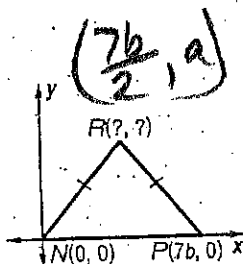
6.



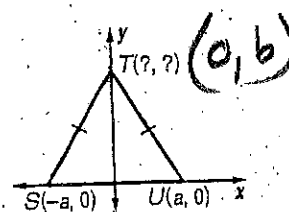
7.



8.



9.



Do the following coordinate proofs on the back of this sheet or on loose leaf.

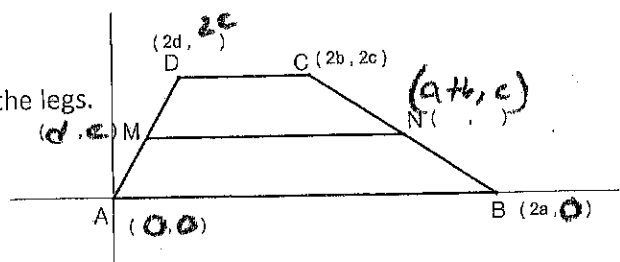
10. Write a coordinate proof to prove that in an isosceles right triangle, the segment from the vertex of the right angle to the midpoint of the hypotenuse is perpendicular to the hypotenuse.

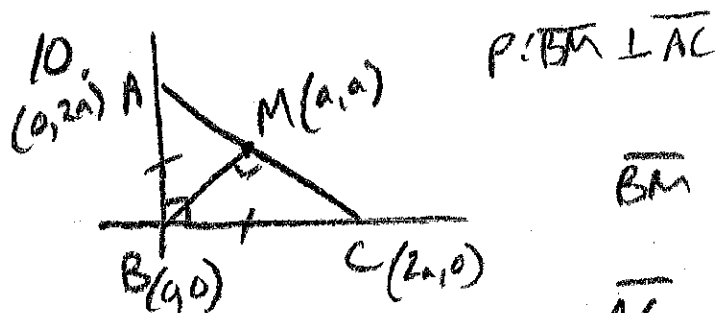
Given: isosceles right  $\triangle ABC$  with  $\angle ABC$  the right angle and  $M$  the midpoint of  $\overline{AC}$   
 Prove:  $\overline{BM} \perp \overline{AC}$

11. Given:  $\triangle ABC$  is isosceles ( $A$  is the vertex angle)  
 $M$  is the midpoint of  $\overline{AB}$  and  $N$  is the midpoint of  $\overline{AC}$ .  
 Prove:  $MN = \frac{1}{2} BC$

Fill in the diagram and then prove:

12. Given: Trapezoid  $ABCD$ .  $M$  and  $N$  are the midpoints of the legs.  
 Prove:  $MN = \frac{1}{2} (AB + CD)$

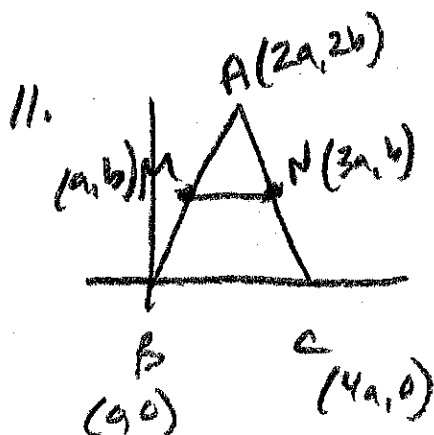




$$\overline{BM} \quad m = \frac{a-0}{a-0} = \frac{a}{a} = 1$$

$$\overline{AC} \quad m = \frac{0-2a}{2a-0} = \frac{-2a}{2a} = -1$$

$\overline{BM} \perp \overline{AC}$  b/c slopes are opposite reciprocals



$$MN = \frac{\sqrt{(3a-0)^2 + (b-b)^2}}{\sqrt{(2a)^2}}$$

$$MN = 2a$$

$$BC = \sqrt{(4a-0)^2 + (0-0)^2}$$

$$BC = 4a$$

$$MN = \frac{1}{2} BC$$

$$2a = \frac{1}{2} 4a$$

$$2a = 2a \checkmark$$

12,  $P: MN = \frac{1}{2} (AB + CD)$

$$MN = \frac{\sqrt{(a+b-d)^2 + (c-c)^2}}{\sqrt{(2a)^2}}$$

$$= \sqrt{(a+b-d)^2}$$

$$MN = a+b-d$$

$$MN = \frac{1}{2} (AB + CD)$$

$$a+b-d = \frac{1}{2} (2a+2b-2d)$$

$$a+b-d = a+b-d \checkmark$$

$$AB = \frac{\sqrt{(2a-0)^2 + (0-0)^2}}{\sqrt{(2a)^2}}$$

$$AB = 2a$$

$$CD = \frac{\sqrt{(2b-2d)^2 + (2c-2c)^2}}{\sqrt{(2b-2d)^2}}$$

$$= \sqrt{(2b-2d)^2}$$

$$CD = 2b-2d$$